



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

April 23, 2007

Mr. Peter C. Gibson
Chief, Program Support Division
U.S. Army Corps of Engineers, Northwest Division
1125 NW Couch Street
Portland, Oregon 97208-2870

Re: National Marine Fisheries Service's review of the September 2006 Interim Final
Sediment Evaluation Framework

Dear Mr. Gibson:

Attached to this letter is our review of the above-referenced document. We want to acknowledge all the hard work on the part of the Corps of Engineers (Corps) and the participating agencies in the development of the Sediment Evaluation Framework (SEF). This collaboration has resulted in a stronger working relationship between our two agencies. We also believe that establishing the Regional Dredging Team (RDT) will assist all the agencies in this process by providing a forum for issue discussion and resolution.

Given the need to conserve Endangered Species Act (ESA)-listed species and essential fish habitat (EFH) under the Magnuson Stevens Fishery Conservation and Management Act, the National Marine Fisheries Service (NMFS) will begin use the SEF, together with supplemental guidance, for sediment characterization. We discussed the need for this guidance in our February 27, 2007, RDT team, and have since provided that table and supporting documentation to the Regional Sediment Evaluation Team for review and comment.

In the review of the SEF and conversations with the resource agencies about the document, NMFS identified the following larger scale issues that we believed the RDT needs to continue to work on as the development of the SEF proceeds:

1. Bioassays - Current bioassays in the SEF are not ideal, although they may provide some protection of fish prey base. For example, recent studies using *Corbicula* by the Corps suggest that in the field it is a good surrogate for contaminant concentrations in salmon stomach contents, based on comparisons of their data and the Northwest Fisheries Science Center from study with the Lower Columbia River Estuary Partnership.



2. Site Rankings and Dredged Material Management Units (DMMU) – The RDT needs to evaluate how site rankings and DMMUs are described in the SEF. NMFS remains concerned about the number of samples used to characterize a DMMU, the need for exclusionary ranking category (Table 5-1) and how volumes are justified within each DMMU ranking (Table 5-2).
3. Sediment Quality Guidelines – NMFS wants to work with the RDT to resolve issues around guidelines for polycyclic aromatic hydrocarbons (PAH), polychlorinated biphenyls (PCB), tributyltin (TBT), metals, and new chemicals like polybrominated diphenyl ethers. For example, PAH guidelines, as currently described in the SEF, are not acceptable to NMFS. PAH's not only result in fish cancer, but may also have effects on development, growth and immune function. For PCBs and TBT, screening level one (SL1) is acceptable, but failing this screening level means that biological testing is needed, which an applicant could pass and have levels up to 1000 ng/g dw for PCBs. There may be cases in which, as an interim step, a test result that exceeds SL1 would still require that those sediments be placed upland.
4. Bioaccumulation Criteria – Sediment bioaccumulation triggers (BT) are not currently available. Bioaccumulation studies with invertebrates will only provide data on dietary levels. For example, NMFS has found that *Corbicula* seem to be a good surrogate for contaminant concentrations in salmon stomach contents, based on the recent study on *Corbicula* by the Corps.

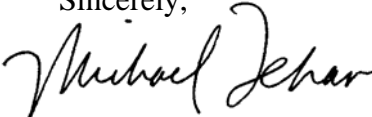
BTs for tissues based on the environmental residue effects database is good start, but the RDT should also consider those that have been developed from these and other data. Note also that because of limited residence time at target sites of outmigrant salmon, criteria to protect resident fish may need to be more conservative. Also, criteria to protect wildlife or human health may be more conservative since they will have higher degree of bioconcentration and/or include very sensitive endpoints, like cancer.
5. Toxic Equivalency Factors (TEFs) – NMFS recognizes that there is more work to be done to complete Chapter 9. NMFS believes that TEFs based on sediment concentrations are not appropriate and would like to discuss this further as this chapter is completed.

During our February 27, 2007, RDT meeting, the interagency cooperation plan for this project was discussed and has since been redrafted to chart a path forward to effectively address these issues.

In addition to these overarching issues that re now being addressed through the process laid out in the interagency cooperation plan, we have compiled specific comments on the interim draft SEF from our State habitat offices and our Northwest Fisheries Science Center (see enclosure). Please note that some of these comments related back to the five overarching issues identified above and should be addressed as part of the path forward identified in the interagency cooperation plan.

Thank you for the opportunity to comment on the SEF and participate in the development of this document. Ms. Cathy Tortorici, Branch Chief, can be reached at 503.231.6268 if your staff has any questions regarding the enclosed comments.

Sincerely,


for

Michael R. Crouse
Assistant Regional Administrator
Habitat Conservation Division

Enclosure: National Marine Fisheries Service Comments on the September 2006 Interim
Final Sediment Evaluation Framework

cc with Enclosure: Doug Aberdeen, Idaho Department of Environmental Quality
Keith Johnson, Oregon Department of Environmental Quality
Brenden McFarlan, Washington Department of Environmental Quality
Richard Parkin, Environmental Protection Agency, Region 10
Don Steffeck, U.S. Fish and Wildlife Service
David Sternberg, Washington Department of Environmental Quality

National Marine Fisheries Service
Comments on the
September 2006 Interim Final Sediment Evaluation Framework
April 23, 2007

Preamble

Preamble, page P-1. We suggest adding to end of second paragraph, “In both cases, agencies may request additional sampling and/or analyses to clarify site condition, or to meet specific regulatory requirements.”

Chapter 1

Section 1.3, page 1-3. Although the manual may be consistent with Federal and state regulations, **the manual may not be sufficient for compliance**. The National Marine Fisheries Service (NMFS) suggests adding this phrase to the first paragraph in section 1.3.

Section 1.5, page 1-7, second line. The word “general” should be replaced with “minimum.” In the same paragraph, please add the Magnuson Stevens Fishery Conservation and Management Act to the list of laws identified.

Section 1.5.1, pages 1-7 and 1-8. This section should be revised to emphasize the use of “best available science.”

Section 1-5, page 1-9. Please add the following phrase to the last sentence in the last paragraph in this section, “While the same amount of data will be collected under the new Sediment Evaluation Framework (SEF) as the historical Pacific Northwest regional manuals, the two-tiered system will be more consistent with national guidance **and an understanding of the ecosystem function provided at the site.**”

Section 1.6.5, page 1-14. NMFS is unsure how Alaska related to this document. Language should be added to clarify the relationship of the SEF to Alaska.

Chapter 2

Section 2.2.5, page 2-5. This section needs additional language about potential project specific requirements that the applicant would have to comply with. Such as conservation measures or changes in project design criteria in order to minimize adverse effects and ensure compliance with the Endangered Species Act (ESA).

Chapter 3

Section 3.4, page 3-2, second bullet. The SEF should identify which agency or entity prepares the memorandum.

Section 3.8, step #4, page 3-8. Quoting from the SEF, “If threatened or endangered species are known or suspected in the project area, the biological opinion will be checked to ensure that the activity is covered. The National Marine Fisheries Service (NMFS) and/or the U.S. Fish and Wildlife Service (USFWS) will be notified that the activity is included in the biological opinion. If the activity is not included as part of the existing biological opinion, a biological assessment for the project will be prepared.”

This step refers to the Standard Local Operating Procedures for Endangered Species (SLOPES) biological opinion. At present, the SLOPES programmatic biological in Oregon does not contain a dredging component. The SLOPES programmatic consultation in Idaho contains dredging. There is no programmatic consultation for dredging in Washington. SLOPES in Idaho pertains to the Army Corps of Engineers designated navigation channel. In Idaho there is about two miles of designated navigation channel that is approximately 15 feet in depth. However, SLOPES does not apply unless the designated channel is 20 feet or more in depth.

Due to this diversity in SLOPES application across Oregon, Washington, and Idaho, reference to “the biological opinion” has no standing and should be removed. In addition, unless a formal programmatic consultation occurs around this SEF, consultation with NMFS and USFWS will be needed for all future dredging/disposal actions that may affect ESA-listed species.

Chapter 4

General Comment. This chapter is filled with jargon. The following terms should be defined, either within the chapter or within a glossary: Level 1, Level 2, primary assessment, screening assessment, preliminary data, initial data, and initial assessment. If any of these terms mean the same thing, duplicates should be eliminated.

Section 4.1, Figures 4-1 and 4-2, pages 4-2 and 4-3. The boxes associated with the ESA-listed species and critical habitat must be checked for all rows in order to ensure that effects to species and critical habitat are evaluated for effects from dredging, disposal, and sediment cleanup actions. In addition, the newly exposed surface must also be investigated in relationship to ESA related effects.

Chapter 5

Overview. Quoting from the SEF, “A complete SAP provides adequate information regarding clearly identified project descriptions, a conceptual site model (CSM) and assessment questions, maps and profiles, sampling locations, sampling procedures, volumes, sampling depths, logistical concerns, an analyte list, and analytical methodologies.”

This statement implies that the CSM is imbedded and influenced by the SAP. That is incorrect. The SAP is derived from the potential receptors identified in the CSM. In order for dredging actions to adequately incorporate the evaluation of ESA-listed species and/or critical habitat into projects, this point needs to be corrected. Proposed language could be: “A complete SAP, derived from the CSM, provides adequate ...”

Section 5.2, page 5-2. Information needs to be provided about site geography and hydro-geomorphology. Is the site erosional or depositional?

Section 5.3.1, Table 5-1, page 5-5. Management Area Ranking Definitions. This table lacks the specificity for meaningful evaluation. Scientific information needs to be provided support these rankings. NMFS is particularly concerned about the Exclusionary Rank. As currently identified, interpretation of this section would result in a majority of dredged material projects falling under the exclusionary ranking. Only those few areas with known problems would be subject to chemical and/or biological testing. This would lead to type II errors (false negative). The Moderate category is not moderate in its potential to have significant effects to ESA-listed species. The implication of the categories is very important because of sampling and testing requirements, and exclusionary zones. When dredging or cleanup sites occur in ESA-listed designated critical habitat, and/or essential fish habitat (EFH), exclusionary ranking should not apply.

Section 5.4, pages 5-6 and 5-7. Determination of Sampling and Analysis Requirements, a) Dredged Material Management Units (DMMU). NMFS would like to see a complete explanation in the SEF about DMMUs. This is an issue NMFS has repeatedly raised throughout the regional sediment evaluation team (RSET) development process and our agency does not believe is appropriate in the context of testing that could involve ESA-listed species. For example, the SEF needs to better explain how the number of samples taken per DMMU was developed. If references could be provided demonstrating that additional testing did nothing to improve characterization, NMFS would feel more comfortable with the proposed guidelines.

Table 5-2 lacks the scientific rationale for meaningful evaluation. How are the volumes justified within each ranking? NMFS does not have enough information to determine whether the “high” ranking, with volumes of heterogeneous sediments up to 5000 cubic yards, is protective of ESA-listed species and/or critical habitat, and/or EFH. When dredging or cleanup is proposed in ESA-listed designated critical habitat, and/or EFH, DMMUs “...based upon the ability to discretely handle each barge load of material separately” seems to be an arbitrary approach to assess biological impacts. Given the fact that DMMUs are often subdivided for the purposes of dredging to remove contaminated sediments, perhaps this table should be removed, and have projects operate on more of a case-by-case basis.

Section 5.5, a) Heterogeneous Sediments, pages 5-8 and 5-9. Quoting from the SEF, “If a discrete lens is present in the sediment profile, volumes may be calculated on the basis (depth and aerial extent) of that lens. To qualify for a separate characterization, however, the volume of the discrete lens must be amenable to being dredged separately from other sediment occurring in the dredging.”

This statement indicates that regardless of the potential of a sediment lens to pose risks to receptors of concern, if that lens cannot be separated during dredging, then characterization does not have to occur. This mechanistic rationale clearly does not appear protective and may pose significant exposure and effects concerns for ESA-listed species and/or critical habitat, and/or EFH.

Section 5.7, page 5-10. NMFS disagrees with the frequency of testing for everything but the “high” ranked areas. Land use and site ownership changes frequently, and the potential is high to miss significant contamination with the currently proposed sampling frequency.

Section 5.8. This comment also applies to the recency of data guideline (see Section 7.8).

Section 5.9.1, page 5-11. NMFS strongly recommends removal of the exclusionary status. This is an issue NMFS has repeatedly raised throughout the regional sediment evaluation team (RSET) development process and our agency does not believe is appropriate in the context of testing that could involve ESA-listed species.

Section 5.9.3. Table 5-3, page 5-12. NMFS does not agree with exceptions for small projects. For example, a small amount of sediment that has a high level of contamination is not suitable for unconfined aquatic disposal. Once again, this is an issue NMFS has repeatedly raised throughout the regional sediment evaluation team (RSET) development process and our agency does not believe is appropriate in the context of testing that could involve ESA-listed species.

Section 5.9.4, page 5-13. Quoting from the SEF, “If dredging results in the exposure of new surface material as clean as, or cleaner than, the overlying sediments, no additional requirements are triggered under this manual.”

Determining whether new sediment surface testing needs to occur based solely on a comparison to the “cleanliness” of the overlying sediments is erroneous and could pose exposure and effects concerns for ESA-listed species and/or critical habitat, and/or EFH. The determination of testing of the new surface should be determined on its own merits, and not based on the overlying sediments.

Chapter 6

Section 6.2, page 6-3. In the following sentence, “The selection of either Alternative 3 or 4 is encouraged if **chemical** analysis is anticipated, because they provide chemical and biological data on subsamples of a single homogenized sample.” the word **chemical** should be changed to **biological**.

Section 6.4, page 6-4. In the following sentence, “Core samplers are typically used to sample thick sediment deposits, collect sample profiles for the determination of vertical distribution of sediment characteristics, or characterize the entire sediment column.” Please add “and the newly exposed surface” at the end of the sentence.

Section 6.4.2, page 6-5. Grab sampling is not an appropriate apriori method to characterize the sediment surface that will be left after dredging.

Section 6.5.5, page 6-8. There may be problems with using compositing to dilute a heavily contaminated sample is very real. A solution to this may be defining smaller DMMUs on a project by project basis.

Chapter 7

General Comment - The link between screening level guidelines and effects on the prey-base of ESA-listed species was mentioned but not adequately developed. There needs to be a better connection made between these in the SEF.

General Comment - While the SEF provides discussion on data quality and reporting, there needs to be a discussion included in the SEF that ensures compliance with a set of minimum requirements. Doing so will avoid the situation of having to receive and review sediment characterization reports with missing documentation or with no quality assurance/quality control procedures.

Section 7.1, Table 7-1, page 7-3. Table 7-1 needs screening level for total dichloro-diphenyl-trichloroethane (DDT). In addition, the numeric values in Table 7-1 need a standard deviation for each chemical.

Section 7.5.2, page 7-10. Butylins. Pore water analysis in marine environments and bulk sediment analysis in freshwater environments needs to be required, not preferred.

Section 7.5.2, page 7-11. Organophosphorus Pesticides. This paragraph states that testing for organophosphorus pesticides and other pesticides are to be considered in major agricultural areas. This should be expanded to include residential areas as according to (Weston *et al.* 2005), residential surface runoff contributed to elevated sediment concentrations of pyrethroids which caused mortality to *Hyallela azteca*.

Section 7.7.4, page 7-15. For chemical analytes that occur in groups, such as DDTs, polycyclic aromatic hydrocarbons (PAHs), and polychlorinated biphenyls undetected results are considered zero value and are not included in the sum. This is problematic because the Method Detection Limits which represents the minimum concentration of a substance that can be measured and reported with 99 percent confidence are always greater than zero. The values included for summation should at the very least be the Method Detection Limit if there is a non-detect in order to avoid a type 2 error.

Section 7.8, page 7-16. The second paragraph on this page states, “The lower screening level (SL1) corresponds to a concentration below which adverse effects to benthic organisms would not be expected, and the upper screening level (SL2) corresponds to a concentration at which minor adverse effects may be observed in the more sensitive groups of benthic organisms (see PSEP 1988, Ecology 1991, 1995, 2003).”

This paragraph misinterprets the sediment management standards and parallel-line paradigm (WDOE 2003) in which the SLs are based upon. According to Washington State Department of Ecology’s Development of Freshwater Sediment Quality Values for use in WA State, the lower of these values represents the Federally approved sediment quality standard and no adverse effects level, above which sediment quality regulatory assessment is necessary. The high value represents the division between minor and significant adverse effects and triggers clean up site identification.

The SEF appears to use screening levels that were derived from different processes, such as the apparent threshold approach and floating percentile approach. Each method has its own independent interpretive rules and to interpret them according to the definition above will result in a misapplication of screening level guidelines and their intended use.

Section 7.8.2, page 7-18. Freshwater versus Marine SLs. The second paragraph in this section states that the selection of appropriate SLs (freshwater or marine) is dependent upon the disposal site. This does not take into consideration newly exposures surface materials at the freshwater site. Saltwater criteria are generally less conservative than freshwater criteria and using them to assess newly exposed surface areas at a freshwater site could result in type 2 errors.

Chapter 8

General comment. This portion of the SEF currently does not address fish. Given this, NMFS thinks that language needs to be developed outlining the limitations of the current test system with a supporting explanation as to how this issue will be addressed over the next year since this is an interim document.

Chapter 9

General comment. NMFS is concerned about the exclusive use of site specific data to address issues related to bioaccumulation. If an area is contaminated, the species found at that site are likely tolerant of the conditions and therefore could be a poor choice to characterize bioaccumulation for the site. Therefore, NMFS suggests that the SEF include a discussion about sample numbers and that the range of species tested should be great enough to avoid the problem of exclusively using species that have become tolerant to contaminated site conditions.

Section 9.3, page 9-17. The last paragraph on this page says, “In areas with sufficient regional tissue and sediment data...” The SEF needs to include language regarding how sufficiency is being determined. For example, will sufficiency be determined by the Regional Management Team?

Section 9.7.2, page 9-12. Quoting from the SEF, “The general consensus in the scientific and regulatory community is that it is difficult to accurately back calculate sediment triggers from tissue levels...” The SEF needs to be careful about using a statement like “general consensus.” NMFS suggests rewording the sentence to say, “Certain parties in the scientific and regulatory community agree that it is difficult to accurately back-calculate sediment triggers ...” Making this wording change would avoid the characterization of a consensus that may not exist.

Section 9.8.1, page 9-15. Quoting from the SEF, “Methods for deriving sediment BTs are currently reserved and will be addressed in the next step in the process.” The point trying to be made in this sentence is unclear. NMFS thinks this sentence needs to be clarified.

Section 9.8.1.1, page 9-16. Quoting from the SEF, “If the mode of action of a chemical is known, a tissue bioaccumulation trigger (BT) could be developed by back-calculating from the

molar concentration of that chemical in tissue associated with toxicity.” NMFS thinks this sentence needs to be reworded to acknowledge that there may not be the information available to do such a back calculation. Perhaps specific examples could be provided to better explain the point of the sentence.

Section 9.8.1.1, page 9-16. Quoting from the SEF, “However, behavioral studies will be carefully screened to ensure that they are of high quality and reflect a bioaccumulation endpoint (*e.g.*, related to contaminants in tissues rather than in water).” NMFS is unclear about the relevance of tissue versus water in this sentence. Is the sentence trying to say that studies considered would include data on contaminant concentrations in tissues of the animals showing the behavioral effects, not just concentrations in water? The point trying to be made is this sentence is unclear. NMFS thinks this sentence needs to be clarified.

Section 9.8.2.3, page 9-25. The tissue bioaccumulation trigger in the formula is confusing because “tissue BT” is actually a dietary dose.

Appendix C – The white paper entitled “Biological Testing – ESA Concerns” (August 2, 2005) should be included in the appendix.

REFERENCES

- PSEP (Puget Sound Estuary Program). 1995. Recommended Guidelines for Conducting Laboratory Bioassays on Puget Sound Sediments. Final Report by PTI Environmental Services for US Environmental Protection Agency, Region 10, Seattle, WA.
- Weston D. P., R. W. Holmes, J. You and M. J. Lydy. 2005. Aquatic Toxicity Due to Residential Use of Pyrethroid Insecticides. Environmental Science and Technology.
- WDOE (Washington State Department of Ecology). 2003. Development of Freshwater Sediment Quality Values for Use in Washington State Phase II Report: Development and Recommendation of SQVs for Freshwater Sediments in Washington State Washington State Department of Ecology, Olympia, WA. September, 2003.

This will not include the Screening Quick Reference Tables (*i.e.*, SQUIRT tables), but we will consider information in various source papers that appropriately characterize, in particular, sub-lethal effects to ESA-listed salmonids. We would like to work with the RDT to develop a supplemental guidance document for ESA-listed species and EFH that can be appended to the interim SEF until such time that unresolved issues are addressed over the long term.